THE LARVA OF *NEUROCHOREMA FORSTERI* MCFARLANE (TRICHOPTERA: HYDROBIOSIDAE)

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ABSTRACT

Harding, J.S. (1991). The larva of *Neurochorema forsteri* McFarlane (Trichoptera: Hydrobiosidae). *New Zealand Natural Sciences* 18: 51-54.

The larva of *Neurochorema forsteri* McFarlane, 1964 is described, and its known distribution extended to include the West Coast of the South Island, Nelson, and central North Island. Larvae of *N. forsteri* are distinguished from others in the genus by a pallid, inverted V-shaped pattern on prosternum.

KEYWORDS: Trichoptera - Hydrobiosidae - *Neurochorema forsteri* - New Zealand.

INTRODUCTION

The trichopteran genus *Neurochorema* is endemic to New Zealand, and contains four described species, but only *Neurochorema confusum* (McLachlan 1868) has been associated with a described larva (McFarlane 1951, Winterbourn & Gregson 1989). McFarlane (1964) collected and described adults of *Neurochorema forsteri* from the Kawarau River Gorge, Otago, and this has remained the only locality from which the species is known. In this paper I describe the larva of *N. forsteri* and provide notes on its ecology and distribution.

DESCRIPTION

LARVA OF *N. FORSTERI*

A slender, brown-green, mottled larva up to 14 mm long (Fig. 1). Head dorso-ventrally flattened, pale brownish yellow, a brown-black pattern roughly following the course of the frontoclypeal and epicranial sutures. Clypeus with two small pallid spots and two partially formed spots posterially; each gena with six or seven pallid spots and several partially formed spots, including three pairs along the epicranial suture (Fig. 2). Head length to width (L/W) ratio 1.36-1.61.

Pronotum wider than long (L/W ratio = 0.80-0.87), pale brown with a characteristic pattern of dark pigment punctuated by pallid spots (Fig. 3). The pronotum also has a conspicuous black flange posteriorly and dark shaded anterior angles.

Prosternum relatively small, wider than long (L/W ratio = 0.71-0.73) with a straight black band posteriorly. Three sclerites are present. The

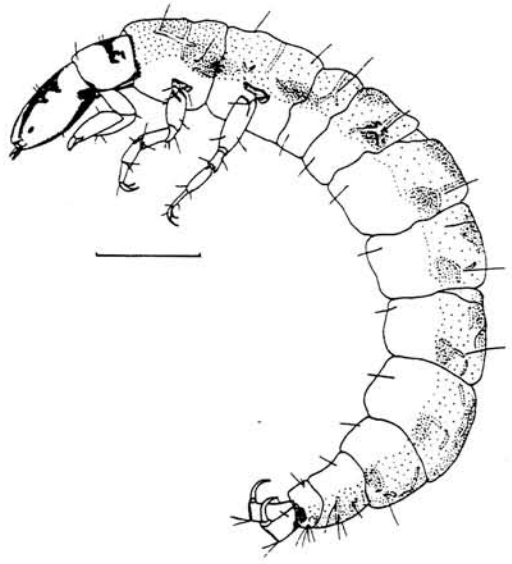

Figure 1. Final instar of *Neurochorema forsteri* (scale bar = 1 mm).

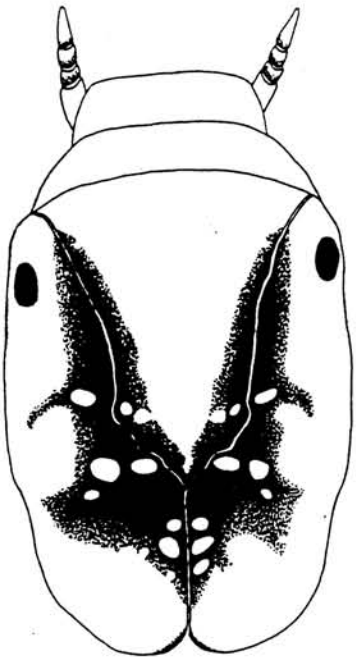

Figure 2. Head capsule (scale bar = 1mm).

primary sclerite is dark brown-black with lighter posterior and lateral margins. A distinctive inverted pallid "V" occurs centrally in late instar larvae, but in early instars it may be incomplete and be represented by three pallid spots. A pallid spot also occurs at each anterior lateral angle of the primary sclerite. The secondary sclerites are small and triangular, one at each antero-lateral angle of the prosternum (Fig. 4).

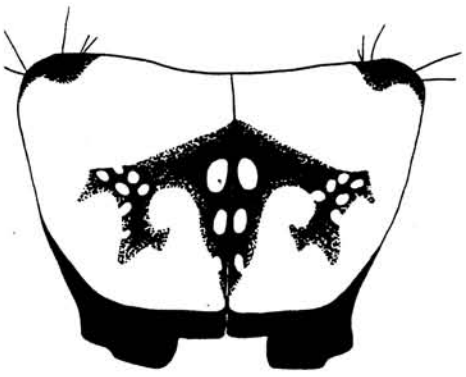

Figure 3. Pronotum (scale bar = 1 mm).

Figure 4. Prosternum.

Forelegs chelate, but not necessarily so (Fig. 5). All legs pale brown, the metathoracic pair longest (Fig. 1).

Dorsal surface of abdomen brown with green mottling. Anal prolegs short and strong, sclerotized on their lateral and dorsal surfaces, pale brown except for some darker pigmentation antero-laterally (Fig. 6). Anal claw prominent.

DIMENSIONS OF FINAL INSTAR LARVA (mm)

	Range	Mean (n=5)
Body length	10.6-13.4	(11.9)
Pronotum length	1.0-1.2	(1.15)
width	0.75-1.0	(0.85)
Prothorax length	0.8-0.9	(0.85)
width	0.95-1.0	(0.98)
Prosternum length	0.4-0.55	(0.5)
width	0.6-0.75	(0.7)

DIFFERENTIAL DIAGNOSIS

Confirmation of the specific identity of larvae was provided by rearing pupae in the laboratory until the external genitalia were fully formed.

Figure 5. Foreleg.

Figure 6. Anal proleg.

Because the larval sclerites are retained within the pupal cocoon, life history stages could then be associated with certainity.

The larvae of *N. forsteri* can be distinguished from those of *N. confusum* by the presence of the brown-green mottled abdomen, and the distinctive posternal markings. The abdomen of *N. confusum* is dark green with dorso-lateral rows of pale spots, and the prosternum lacks markings (McFarlane 1990). Superficially, larvae are similar to those of *Costachorema brachyptera* McFarlane in colour and, head and pronotum markings, however those of *N. forsteri* are smaller, more slender than equivalent instars of *Costachorema*.

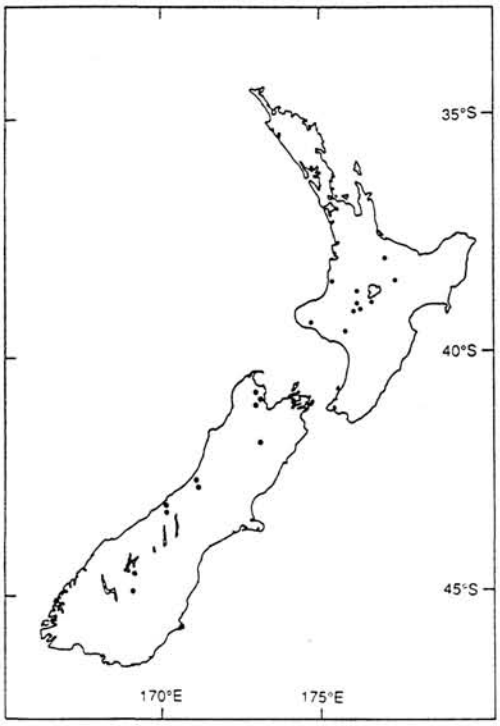

Figure 7. Know distribution of larvae of *N. forsteri*.

MATERIAL EXAMINED

NI- 1 larva, TO, Upper Wheo River, Dec 1989; 1 larva, TO, Ongarue River, Jan 1990, D.O.C. Survey; 1 larva, TO, Upper Wanganui River, Jan 1990, D.O.C. Survey; 2 larvae, TO, Mangatepopo River, Jan 1990, D.O.C. Survey. SI- 1 final instar larva, WD, Kaniere River, 17 Aug 1989; 1 larva, WD, Geologists Creek, Nov 1989; 1 larva, WD, Kokatahi River, Jan 1990, D.O.C. Survey; 1 larva, WD, Styx River, Dec 1989; 4 pupae, 4 final and 6 mid instar larvae, WD, Okarito River, 22 Jun, 21 Jul, 18 Aug and 18 Oct 1989; 1 larva, WD, MacDonald Creek, Dec 1988; 1 final instar larva, CO, Upper Clutha River, 6 May 1989. All material collected by the author unless otherwise specified. Voucher specimens have been deposited in the N.Z. Arthropod Collection, D.S.I.R. Plant Protection, Auckland, and in the Canterbury Museum, Christchurch.

NOTES ON BIOLOGY AND DISTRIBUTION

Larvae were collected from medium to large stony rivers, 5 to 50 m wide and 20 cm to 1.5 m deep. They were usually found on the undersides of cobbles and boulders in fast water (up to 0.9 m s^{-1}). The altitudinal range of collecting sites was 30 - 800 m a.s.l., water temperatures of these rivers range from 4.8°C to 23°C.

The guts of middle and final instar larvae from Okarito River contained chironomid larvae and no other food items. Larvae of all sizes occur during most of the year, although larvae and pupae were most abundant between June and October in the Okarito River, South Westland.

When ready to pupate, larvae construct small elongated dome shaped shelters up to 16 mm long of fine sand grains packed close together. The shelters are both smaller and stronger than those of most other hydrobiosids and occur on the undersides of cobbles and boulders. Inside the shelter the larva spins a loose transparent silken cocoon.

Larval collections by Dr. John Stark, Dr. Don Cowley, Tim Malthus, Barry Biggs (Biggs &

Malthus 1982), staff of the Taranaki Regional Council, D.O.C. Survey Teams, and the author have identified 52 streams where *N. forsteri* are present (Fig. 7).

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